

We claim:

1. A process for preparing 1,6-hexanediol having a purity of  $\geq 99.5\%$  by weight by catalytically dimerizing acrylic esters and catalytically hydrogenating the hexenedioic diesters obtained in this way to 1,6-hexanediol by
- a) dimerizing  $C_1$ - to  $C_8$ -acrylic esters in the presence of at least one rhodium compound to give mixtures of predominantly 2- and 3-hexenedioic diesters,
- b) hydrogenating the resulting dimerizing effluent in the presence of chromium-free catalysts comprising predominantly copper as the hydrogenation component and
- c) purifying the crude 1,6-hexanediol obtained in this way by fractional distillation.
2. A process as claimed in claim 1, wherein unconverted acrylic ester is removed from the dimerization mixture before the hydrogenation.
3. A process as claimed in either of claims 1 or 2, wherein the acrylic ester used is methyl acrylate.
4. A process as claimed in any of claims 1 to 3, wherein the hydrogenation is carried out over a catalyst which in the oxidic form has the composition
- $$Cu_aAl_bZr_cMn_dO_x$$
- where  $a > 0$ ,  $b > 0$ ,  $c \geq 0$ ,  $d > 0$ ,  $a > b/2$ ,  $b > a/4$ ,  $a > c$  and  $a > d$ , and  $x$  is the number of oxygen atoms required per formula unit to preserve electronic neutrality.
5. A process as claimed in any of claims 1 to 4, wherein the dimerization is carried out at from  $-100$  to  $150^\circ\text{C}$  and pressures of from  $0.1$  to  $1$  atm.
6. A process as claimed in any of claims 1 to 5, wherein the hydrogenation is carried out at from  $100$  to  $350^\circ\text{C}$  and pressures of from  $30$  to  $350$  bar.